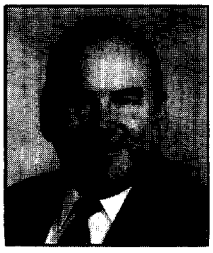

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Vice President &
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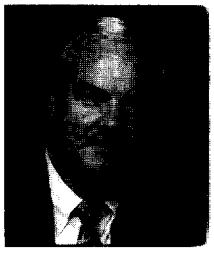

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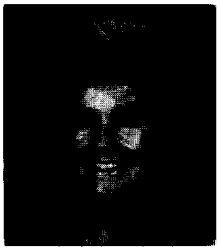

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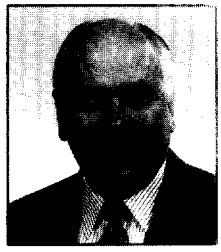

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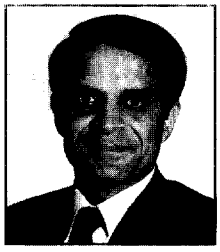

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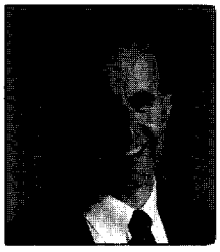

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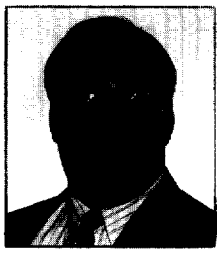

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A GOLDEN JUBILEE CELEBRATION

Fifty Years of Standards Writing

In late 1994 TIA paid trib e to 50 years of standards writing with the publicati of the first Standards and Technology Annual Repo STAR) and a Golden Jubilee Dinner. Nearly 100 pe ple, including guests from the Federal Communications ommission (FCC), Depart ment of Commerce and the W ite House, joined TIA in celebrating the golden annive ry of a TIA engineering committee, TR-8 Mobile and ersonal Private Radio Standards, still in existence today.

Dr. Arati Prabhakar, I rector of the National Insti tute of Standards and Technol gy (NIST), provided the keynote address, "Technology Applications: Building the National Information Infrastru ure." TIA President Matthew J. Flanigan hosted th evening, and EIA Presi dent Peter F. McCloskey and A Chairman emeritus John Major were special guest speak

Outstanding Achieveme Awards were presented to three individuals for their co ributions to the formulation of TIA standards. There w an exceptional field of candidates from which the nom ating committee selected the recipients:

Victor Boersma, former sistant Director of Standards Related Matters for North n Telecom, led TIA's TR-41, User Premises Telephon Equipment Require ments, for over a decade before iring in April 1995. Under his guidance, harmonizat n of Part 68 and CS-03 government regulations was acc plished after three long years of meetings. Mr. Boersma yed an active role in international harmonization, and e was a key player with the negotiation team of the U.S overnment for a mutual recognition agreement with Ger my.

One of Mr. Boersma's go for TR-41 was to establish liaisons with other standards veloping organizations, and under his direction, joint me ngs with the Canadian Standards Association (CSA) and stitute of Electrical and Electronic Engineers (IEEE) hav een held. Contact with the European Telecommunication Standards Institute (ETSI) was also established.

He was also involved in launching the Consultative Committee on Telecommunications (CCT), the body which represents the telecom industry in the implementation of the North American Free Trade Agreement. He served as the Chair of the Conformity Assessment working group of the CCT.

Victor Boersma

The Outstanding Achievement Award recognized Mr. Boersma's dedication to his responsibilities as chair, his thoroughness in reviewing details of the documents and his international focus on standards.

Peter Bennett

Peter Bennett played an essential role in establishing the Standards and Technology Department at TIA. He served as Vice President of TIA from 1988 until his retirement in 1993. His responsibilities included oversight of the activities of TIA's technical standards program. To a large degree, TIA has become the leader in telecommunications standard-setting thanks to Mr. Bennett's leadership and hard work. From 1984 until 1988, prior to the formation of TIA, he was Staff Vice President, Information and Telecommunications Technologies Group, for the Electronic Industries Association. He was involved in the design and manufacture of telephone equipment for more than 20 years.

Marvin McNeil

Mr. Bennett's valuable knowledge of TIA's standards-making process and his ability to make quick and fair decisions related to unprecedented matters in the standards arena have made a significant impact on the standards-making activities of TIA.

Marvin McNeil pioneered the formation of TIA's Fiber Optics Engineering Committees. He served as chairman of subcommittee FO-6.4 (Test Methods &

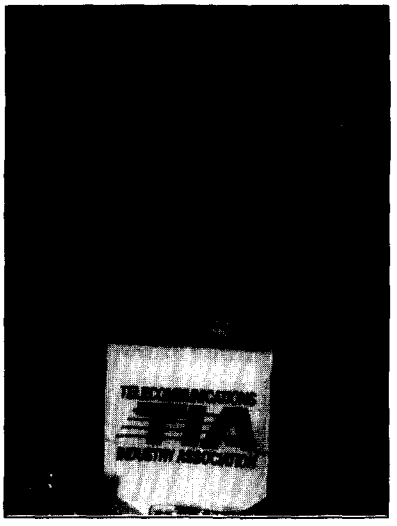
Implementations) from 1982 until his retirement from Siecor in 1992. Mr. McNeil is most noted for his authorship of the first five fiber optic test procedures. He was also personally responsible for the revision of dozens of other test procedures.

Mr. McNeil served as chairman of the working group responsible for the detailed specification (EIA-472) which provides the design, operational parameters and quality assessment requirements for an individual cable or a family of cables. He wrote the author's guide for fiber optic test procedures and made subsequent revisions. Mr. McNeil was also involved with a number of other standards-developing organizations and government agencies.

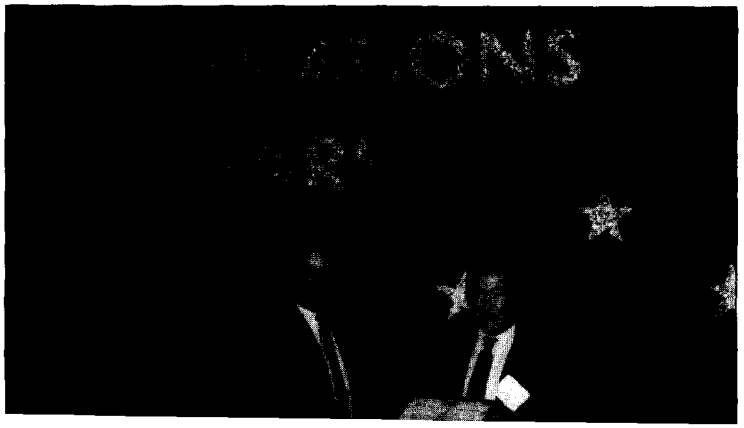
Mr. McNeil has made an outstanding contribution to the creation of fiber optics standards on behalf of TIA and has influenced the industry as a whole.

TIA honored these three men at the 1994 STAR Golden Jubilee celebration. However, many others also contributed to TIA's standards successes over the years. Creating quality standards takes many long and dedicated hours of detailed technical work. TIA appreciates the efforts of all the technical personnel who support these efforts. ■

Dr. Arati Prabhakar, Director, National Institute of Standards & Technology (NIST), discusses the National Information Infrastructure (NII) with attendees of the STAR Golden Jubilee at TIA's Annual Meeting and Conference.



Peter McCloskey, President of the Electronic Industries Association, addresses TIA's standards efforts at the STAR Golden Jubilee.



TIA Technical Committee Chairman (1994) Leigh Belden of Verilink Corporation, now Chairman of the Board (left), presents former TIA Vice President

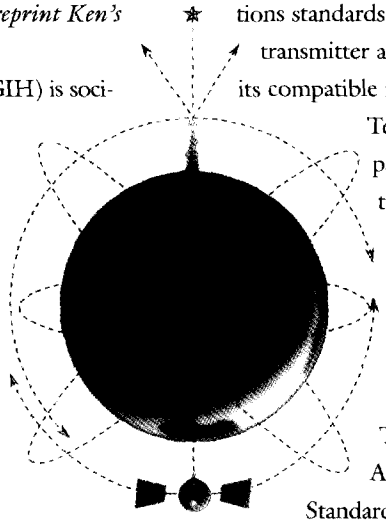
RECOMMENDATIONS FOR THE GLOBAL INFORMATION HIGHWAY:

A Matter of Standards

by Ken Krechmer, Editor, *Communications Standards Review*

Ken Krechmer from Action Consulting, a TIA member company, and Communications Standards Review, contributed this article for the 1995 American National Standards Institute World Standards Day event. Ken's submission was chosen as the best from the many contributions and he was awarded a cash prize by the Standards Engineering Society. TIA has received permission to reprint Ken's award-winning article for the 1995 STAR.

The Global Information Highway (GIH) is society's vision for the telecommunications systems that may one day provide nearly unbounded personal communications. To make this vision practical, telecommunications standards which define compatibility within the GIH and at the access points are necessary. These telecommunications standards become a form of laws, not governmental or physical, but related to both. These laws control the ways to access and implement the GIH. A variety of standards organizations define these telecommunications standards.



The laws of the GIH are too important to society to be created only in the technical fora of standards organizations. Wider participation in the telecommunications standards making process is developing, and telecommunications standards organizations are expanding their focus to help implement society's new vision. But much more remains to be done to create a broad consensus that could further define and carry this early vision of the GIH forward to actuality.

What is a Standard?

Today, standards are used for many purposes. Standards define a specific aspect of a device such as its external color or the size of lead in a pencil or type faces or computer operating systems. Device standards are very helpful in the manufacturing and distribution process, but are not necessarily crucial for every function: if every fire engine was a different color of red, the fire would still be extinguished. If every pencil had a different diameter of lead, the scribe could still take notes. If every computer had a different operating system and printed with a different type font, their applications would still be useful.

Standards that directly support telecommunications such as the mechanical dimensions of a connector, the electrical properties of the signals that pass through the connector, or the protocols that maintain order in the data stream through the connector are critical to telecommunications. For telecommunications to occur, telecommunications standards must define aspects of two devices, the transmitter and the receiver. Without a transmitter and its compatible receiver, communications does not occur.

Telecommunications standards define compatibility, not sameness. This makes telecommunications standards distinct from device standards.

History of Telecommunications Standards

The term standard was first used in 1138 AD in the description of the "Battle of the Standard" because "it was there that valor took its stand to conquer or die."[1] Thus the earliest use of the term is as a flag or conspicuous object indicating a rallying point. Later the term evolved to indicate a physical definition often called "the king's standard."

A telecommunications standard is derived from this concept of a defined rallying point. With less heraldic flair and far greater complexity, telecommunications standards define a point of connection in any public telecommunications system. But the concept of who defines the standard has changed completely since 1138.

In 1138 AD, a king was the only creator of a standard. Following societal progression, kings gave way to governments. In communications, standards-creating evolved to where multiple governments needed to agree to create a standard. In 1865, the desire for compatible telegraph operation engendered the formation of the International Telegraph Union, the predecessor of the ITU (International Telecommunication Union) of today. In 1885, only twenty years after its creation, the ITU made the first formal provisions for international telephony. Thus the ITU, an organization of many governments, created the world's first intergovernmental telecommunications stan-

dards: the laws that governed the interconnection of the telegraph and telephone systems.

Today, standards are created nationally by governments and companies working together in national telecommunications standards authorities (e.g., ATIS, TIA, TTC, ETSI).[2] The work from these organizations is then brought to the ITU, which is still a governmental-based telecommunications standards authority. Through the auspices of the ITU, governments and companies together create international standards to make possible international radio and telecommunications.

The Rise of Membership-Based Standards Authorities

Companies such as IBM and later the newly divested AT&T dominated North American telecommunications standards development in the 1980s with their significant technical expertise and capital for both meeting attendance and research work. To balance the power of these larger commercial organizations in the United States, various trade associations have sponsored formal standards-making authorities such as IEEE 802, TIA TR and ATIS T1 committees to create national telecommunications standards. Outside of North America, the Post Telephone and Telegraph (PTT) organizations of various governments have been able to balance the resources of the larger companies in TTC (Japan), ETSI (Europe), and in other regional telecommunications authorities. These different regional telecommunications authorities have developed into a second tier of telecommunications standards authorities that also bring their standards to the ITU.

A standards authority may be distinguished from other standards organizations in two ways:

- Integration of its activities into the work of other existing standards authorities. In this manner, the area of work is agreed to have minimum overlap with other existing standards work.
- A set of rules is employed to maximize fair, unbiased operation of the standards authority and the broadest possible consensus among the members, whether they be governments, companies or both.

Standards authorities, then, create non-overlapping telecommunications standards ("Recommendations" in the ITU), based on industry or government consensus.

The Growth of Other Standards Fora

Telecommunications standards are being created by more and more varied standards organizations. Today at least **five different types** of organizations are creating telecommunications standards.

New telecommunications standards fora are often formed to provide closer connection to user requirements, or to develop a specific technology or market segment. Rapidly emerging technologies such as wireless, cable and satellite require new telecommunications standards. Development engineers engaged in the creation of these new communications technologies often lack an understanding of existing standards organizations, by type, function or importance. There is currently no formal scholastic curriculum teaching the importance of standards. Development engineers are focused on development goals. Sometimes the development engineers are of the opinion that standards authorities move too slowly. Because of all this, development engineers often take the approach of standardizing a new telecommunications technology by forming a new, independent standards organization.

Independent standards fora, unlike standards authorities, are not controlled to minimize overlapping and incompatible efforts. The proliferation of independent standards organizations that are not connected to existing standards authorities has been cause for some concern as there is a tendency for multiple, independent standards organizations to create overlapping and - worse - incompatible standards. The concern is that two different pieces of telecommunications equipment are not able to communicate without supporting the exact same telecommunications standards. However, system and technology effects can make possible, or even desirable, support of certain incompatible telecommunications standards without impeding telecommunications.

Technology's Effect on Overlapping Standards

Telecommunications standards are a mix of definitions derived from physical laws and agreements reached by groups of people. Open System Interconnect (OSI) is a reference model defined in ITU-T Recommendation X.200 for the processes of a communications system. It comprises seven layers, ranging from the lowest layer (one) which is

the physical (e.g., wire or fiber), to the highest layer (seven) which is the application. Applications may be user-related or associated with the information system.

At the lower layers of the OSI model, definitions based on physical laws dominate the standards. The lower layers of the OSI model deal with the dimensions of the connector, the electrical signals, and the organization of the data stream transmitted. This work is closely based on physical laws.

At the higher layers of the OSI model, the issues change. At higher layers, agreements reached by groups of people dominate the standards. Because of the inherent nature of the communications at each layer, formal (i.e., non-overlapping) telecommunications standards are less important at higher layers of the OSI model. OSI layers five and six deal with issues such as how the data is represented and procedures that support restart and/or data recovery in the event of a communications failure. These issues, while critical to some communications systems, are not critical to the operation of all communications systems. They are application-dependent. For this reason, it may be desirable to support multiple overlapping and incompatible higher layer telecommunications standards for similar functions but differing applications.

The technology that makes practical the implementation of multiple overlapping telecommunications standards is the use of programmable processors. Fixed function telecommunications systems and equipment demand fixed standards, e.g., leased line modem communications over fixed facilities to a host computer. Currently, the lowest layers of the OSI model require fixed standards. These layers define the mechanical dimensions of connectors, the electrical characteristics of signals over wire, and start-up signals. But the protocols that define the data stream through the connector no longer must be fixed. Software-controlled telecommunications equipment can change the protocol as desired, decreasing the need for higher layer fixed telecommunications standards. Examples of such operation include multiple protocol stack routers, V.42 error control procedures in modems[5], and support for multiple voice digitization and compression algorithms in telephone network equipment.

The continuing expansion of the power of microprocessors and digital signal processors will soon make possible telecommunications equipment which is more completely software-controlled. In wireless telecommunications standards, this effect will be even more pronounced once tunable radio frequency sections are controlled by microprocessors, and are able to select operating ranges over a wide bandwidth. Wireless telecommunications equipment which is controlled completely by software is possible because there is no physical connector to standardize.

Telecommunications Standards Organizations	Type:	Controlled by:
ITU	Governmental standards authority	Governments
ATIS, TIA, ETSI, TTC	Membership standards authorities	Trade associations[3]
ATM Forum, Frame Relay Forum	Independent fora with ties to standards authorities	Members
Internet Engineering Task Force	Independent fora	Technical users
PCCA, DSVD[4]	Company fora	Companies

When the microprocessor and digital signal processor programs may be loaded into telecommunications equipment under control of a user or managing system, the telecommunications equipment is described as having an open architecture. Open architecture telecommunications makes practical multiple overlapping telecommunications standards. In open architecture systems, the lack of a common standard does not prevent telecommunications. With multiple standards for similar functions, the users can choose which standard to load into their equipment, and they may switch back and forth as needed. The equipment may be able to do such switching automatically, based on the signals received from the equipment at the remote end during start-up.

Some would argue that overlapping telecommunications standards are a waste of resources even if they can be made to work. But overlapping standards can be a means

to foster competition – between technology approaches and/or between companies. Overlapping telecommunications standards may also allow a consensus in the standards organization when it is not possible to achieve consensus within a technical debate. Finally, the declining cost of processors and memory within the equipment itself allows the support of similar but different telecommunications standards at very little additional cost.

The GIH is the Backbone of the Personal Communications Revolution

Until recently, worldwide telecommunications was offered with little choice of service or provider. Western Union provided telegraph service. AT&T, Regional Bell Operating Companies or the PTT operators in countries outside of North America provided telephone service. This lack of competition created a slowly evolving communications system that lagged behind society's needs. For example, consider the difficulty ordering Integrated Services Digital Network (ISDN) service in North America, a PPP connection[6] in Europe, or a telephone in many other parts of the world. Where the public telecommunications service is well run and well funded, it is barely acceptable. And where it is poorly run and/or poorly funded, it can be a significant impediment to regional economic success.

In the 1980s through the mid 1990s, the personal computer revolution has had major effects on society. It has decreased the tyranny of hierarchical organization on computer users. In North America, the growth in small businesses and the flattening of the management structures of larger organizations was made possible by the increased use of personal computers.

The personal communications revolution of the 1990s describes the external view of society's vision for the Global Information Highway. The personal communications revolution will also have major impact on society. Personal communications will do much more than flatten the hierarchical telecommunications structures devised in the early Twentieth Century. It will change the society we live in just as the telegraph (real-time point-to-point data) and the telephone (real-time point-to-point voice and data) did previously. Personal communications will support real-time or delayed communications, point-to-point and multi-point communications, for voice, image and/or data.

The Internet demonstrates that a worldwide telecommunications network based on lower OSI layer telecommunications standards[7] can support as many applications as users can imagine. And the higher layer OSI standards need only be those accepted by the users of the Internet. This demonstrated capability of the Internet is one promise of the Global Information Highway–a network with applications limited only by the imagination. Once the lower layer practicalities of required telecommunications standards are in place, each user should be free to create or choose the type of applications to use. Much like a modern highway, the Global Information Highway should allow the passage of an amazing number of different vehicles, with little or no change needed in any telecommunications standard.

Conclusions: New Directions for Standards Work

The world's telecommunications standardization organizations are creating the telecommunications standards that make possible the GIH. They are also taking part in a discourse to help direct the personal communications revolution. Two major areas must be considered:

1. The changes required in the operation of the standards organizations themselves to prepare for further work on the GIH.
2. How the GIH will exist in the societies it serves.

Some of the more vital issues regarding the changes needed in the operation of standards organizations are:

- Telecommunications standardization authorities need to adopt a more proactive stance toward emerging telecommunications standards fora, assisting with organizational issues and working to avoid overlap in their respective work programs. In general, the existing telecommunications authorities should provide active support, not competition, to emerging standards fora. Achieving the broadest support for the standard is far more important than where the standard is created.
- Telecommunications standardization authorities should focus even more on the lower layers of the OSI model. This is where new technologies (broadband ISDN, wideband wireless, PCS, satellite) will continue to create the need for new telecommunications standards. The telecommunications standardization authorities should, at the same time, divide responsibilities for some areas of higher layer work with standards organizations that have

greater user membership and participation. Higher layer work that might be considered for such division includes applications programming interfaces, security and network management.

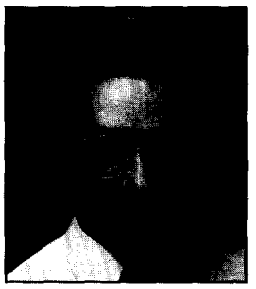
- Universities do not currently train engineers to understand the importance of standards in general or telecommunications standards in particular. The standards organizations need to help correct this omission.

Some of the key issues in the discussion on how the GIH will exist in the societies it serves are:

- Most highways are not tolls roads. To allow the world's information the same freedom as the world's cars, the GIH should also not be a "toll road." But the issue of financing the GIH begs wider discussion.
- Many of the social issues of the GIH may be affected by technology as well as by laws (of the governmental kind). Consideration and public discussion of the technical possibilities to mitigate societal problems (pornography, undesired advertising, unsupervised or uncontrolled usage by minors, etc.) on the GIH are needed before less rational "solutions" are developed by factions which don't understand the GIH.

Finally, the most exciting and yet most disconcerting prospect of the personal communications revolution is that personal communications over the Global Information Highway will lead the societal structure. The attendant changes to the many structures in society – personal, business and government – will not be well understood until after they have occurred. Personal communications over the GIH creates new possibilities for individual freedom and will require new awareness of individual responsibilities.

Wise guidance during this period of societal change would be very beneficial. Several hundred years ago, when new freedoms and responsibilities were also being discussed as the United States emerged as a new country, the leaders decided to create a charter to provide guidance. The ITU, as a UN organization chartered to support telecommunications, could be the logical organization to undertake the coordination of the work to write the "Declaration of Telecommunications Independence." Such a charter could go far to direct the vision of the Global Information Highway. ■



Ken Krechmer

Ken Krechmer is the founding technical editor of *Communications Standards Review, Communications Standards Summary* (CSS) and *Fiber Optic Standards Summary* (FOSS), the only technical journals reporting on standards work-in-progress in TIA and ITU. CSS and FOSS are both TIA authorized publications. He has also been secretary of TR-29 1990-1995 and a U.S. delegate to ITU-T SG 8, 14 and 15 meetings. Utilizing this broad view of communications standards work, he consults and teaches how this work will affect organizations, products and services. Clients have included France Telecom, NDC, Dialogic, Cirrus Semiconductor, Ascend Communications, Pacific Telesis and many others. ■

[1]This was reported by a contemporary writer of the period Richard of Hexham. The quote is from a Latin couplet written on the occasion.

[2]ATIS: Alliance for Telecommunications Industry Solutions, TIA: Telecommunications Industry Association, both in North America; TTC: Telecommunications Technology Council in Japan; ETSI: European Telecommunications Standards Institute.

[3]ETSI and TTC also exhibit governmental direction.

[4]PCCA: Portable Computer Communications Association; DSVD: Digital Simultaneous Voice and Data Forum.

[5]V.42 supports two different error control procedures, LAPM (Link Access Protocol for Modems) and MNP (Microcom Networking Protocol), which was originally a proprietary solution.

[6]PPP (Point-to-Point Protocol) is a popular mechanism used to access the Internet.

[7]The protocols of the Internet are associated with OSI layers 3 and 4 where end-to-end communications are supported.

CITEL AND THE TELECOMMUNICATIONS REVOLUTION IN THE AMERICAS

by Roberto Blois, Executive Secretary of CITEL

The Summit of the Americas in December 1994 directed CITEL to take on more responsibility for telecommunications standardization in this region. TIA joined CITEL's Permanent Consultative Committees as an Associate Member in 1995. In order to help TIA members and others to more clearly understand the role, mission, and structure of CITEL, TIA requested Roberto Blois, Executive Secretary of CITEL, to expand upon CITEL and the telecommunications revolution in the Americas.

While coordinating the development and implementation of telecommunications standards among nearly every nation in a two-continent hemisphere is an enormous challenge, it is one that the Inter-American Telecommunication Commission (CITEL) gladly accepts. An entity of the Organization of American States (OAS), CITEL aims to harmonize the differing goals and objectives of its members to further the development of telecommunications in the Americas.

The current worldwide telecommunications revolution is well-rooted in the Americas, and CITEL is rising to meet the challenges that this revolution presents. An organization that was once a series of conferences has evolved into a highly structured commission, sensitive to its rapidly changing environment and acutely aware of the role of the private sector in its own success.

The Structure of CITEL

CITEL is headed by an assembly, consisting of all the 35 independent nations of the Americas. The Assembly, which meets every four years, decides on the structure of the Commission and establishes budget limits and sets broad policy guidelines. In between sessions of the CITEL Assembly, the Permanent Executive Committee (COM/CITEL) represents the Assembly, maintains administrative oversight of the operation of the Commission and is responsible for implementing the policy guidelines put forward by the Assembly.

COM/CITEL oversees the operations of the three Permanent Consultative Committees (PCCs). The Assembly, in 1994, established the PCCs to carry out the Commission's mandate. These three PCCs are: PCC.I - Public Telecommunications Services, PCC.II - Broadcasting and PCC.III - Radiocommunications. COM/CITEL also has a steering committee composed of the chair and vice-chair of COM/CITEL and the chairs of the PCCs. COM/CITEL also has established a working group for telecommunications development, a working group for coordination with the human resource training centers and a joint working group on legal matters.

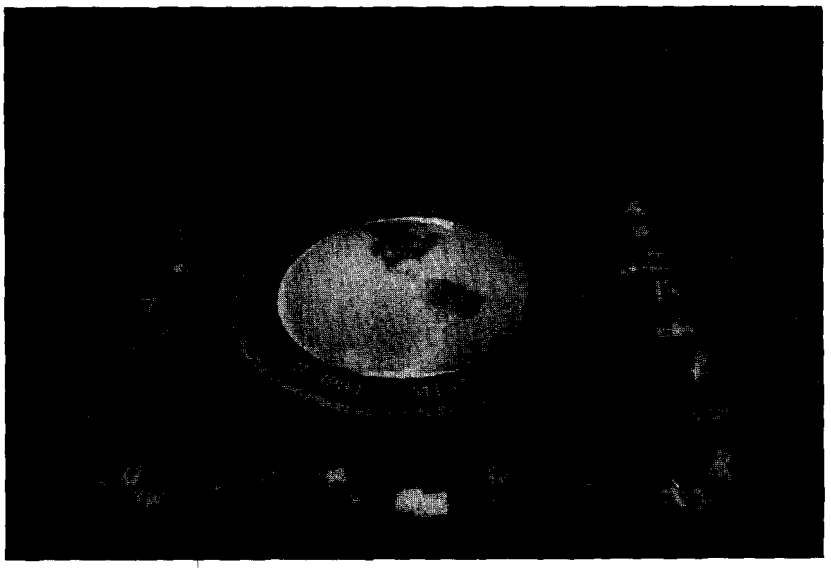
Within the structure of CITEL, it is the three PCCs which are the working committees responsible for furthering CITEL's ends. The purpose of the PCCs is to advise members on matters relevant to their areas of competence— Public Telecommunication Services (PCC.I), Broadcasting (PCC. II) and Radiocommunications (PCC.III).

PCC.I supervises the integration and strengthening of networks and public telecommunications services operating in the countries of the Americas, taking into account the need for modernization of networks and promotion of basic and universal telecommunications services, as well as increasing the public availability of specialized services, and the encouragement of the use of International Telecommunication Union (ITU) standards and radio regulations.

PCC.I has established the following working groups (WG): WG on the Development of Human Resources; WG on Standards Coordination; WG on Basic and Universal Telephone Services; WG on Network Modernization; WG on Value Added Services; and a WG on the Equipment Certification Processes employed in member countries.

PCC II stimulates and encourages the regional presence of broadcasting services, encouraging the use of modern technologies and improving the public availability of such communications media, including audio and video systems. PCC.II promotes the use of ITU standards and radio regulations as they apply to the broadcasting services. In order to accomplish these tasks, PCC.II has established two working groups, one to supervise digital audio broadcasting and one to coordinate the incompatibilities of the 1981 Rio de Janeiro Plan which covers the operation of the AM-Broadcast band in the Americas.

PCC.III promotes the harmonization of radiocommunications services, with an eye toward reducing those factors which may interfere in the performance and operation of networks and services. PCC.III promotes the use of modern technologies and the application of ITU radio regulations and standards. The working groups of PCC III are: WG on Very Small Aperture Terminals (VSATs) in the Americas; WG on Terrestrial Mobile Communications; WG on Implementation of Low Earth Orbit Satellite (LEOS) Service below 1 GHz in the Americas; and WG on International Radio Amateur Permits. Because of overlapping interests, it has been necessary to establish two joint working groups, WG on the Use of the Radio Spectrum and WG on Preparations for Future ITU Radio Conferences.



President Clinton addresses members of the Organization of American States at the Summit of the Americas, December 1994. At the meeting CITEL was requested to take a more active role in the harmonization of telecommunications standards and equipment certification.

To assist in providing leadership and focus to the CITEL organization, there is a small Secretariat headed by an executive secretary based in Washington, DC.

The Changing Telecom Environment of the Americas

For years experts have predicted the opening of the telecommunications market in the Americas. There are a number of recent examples of promising nations in the Americas which are receptive to the economic, social and political changes that advancing technology brings. The role of CITEL in this process of positive change is to ensure that each of its members is granted a seat at the policy table.

At the Summit of the Americas in December 1994, CITEL was directed by its membership to: evaluate various means to promote liberalization, common standards, interoperability of networks, and the compatible use of spectrum within the Americas; promote greater consistency in the certification processes for telecommunications equipment; develop regional guidelines for the provision of international value-added services; and coordinate the holding of a conference in 1996 of senior telecommunications officials to further discuss the decisions of the Summit. What CITEL learned in bringing together its membership and reaching consensus on an agenda was that it could not only serve its membership better in the region, it could speak more eloquently on behalf of its constituency in other fora, namely the ITU, in Geneva, Switzerland.

In order for CITEL to best represent its member nations, it must work in close coordination with other non-OAS member telecommunication organizations, and the ITU is a most crucial ally. CITEL is a regional body and ITU is a world body; therefore, it is imperative that the two organizations work in tandem to avoid duplication of work and ensure that the goals and objectives of each organization are achieved efficiently and effectively. No matter the issue— be it spectrum allocation, use of the geostationary orbit, or global telecommunications standards— CITEL and ITU must be committed to working together if telecommunications technology is to be advanced in the Americas.

The Role of the Private Sector

The single most dynamic factor in CITEL's future is the role of the private sector. In June of 1994, CITEL decided that to be truly inclusive of the private sector, it would have to provide for the contributions of this sector within the CITEL structure, and the Associate membership was created.

Associate membership on a PCC of CITEL is open to recognized operating agencies, industrial organizations and financial or development institutions related to the telecommunications industry, provided such membership is approved by the corresponding CITEL member state. Associate members are required to contribute financially to the organization each year, although their level of contribution, measured in units of US $1,000, is voluntary after the first unit. Associate members of a PCC may participate fully in all activities of that PCC, but they may not vote. They may present technical papers and receive the documents of that PCC.

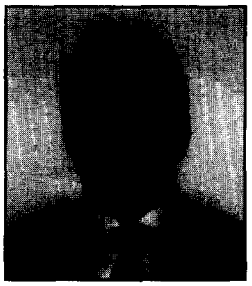
In addition, when authorized in writing by a duly designated governmental representative of a member state which is a member of a PCC, an Associate member of that PCC, and on behalf of, and in representation of, that state is eligible to: (1) vote, (2) submit papers, and (3) propose to include topics on the PCC's agenda

As CITEL endeavors to take on a greater role in the regional and global telecommunications policy debate, the issue of technical support is quickly brought to the fore. CITEL cannot continue to grow and further serve its membership without the requisite input of those involved in the manufacturing and deployment of the given technologies— the private sector.

Conclusions

We who work in telecommunications are indeed fortunate to be part of this dynamic industry that has the potential to improve people's lives and connect the world. Telecommunications is the highway on which economic development and advancement are traveling now and will continue to do so for the foreseeable future. CITEL is on this road as well, laying the groundwork for a seamless ride with its standards coordination. The new telecommunication services which are just around the corner have the potential to transform the world as we know it. The impact of being able to bring modern communications to even the remotest of places defies the imagination, yet represents a goal based in reality.

CITEL has a leading role to play in the communications revolution. The heads of states at the Summit of the Americas in December 1994, gave CITEL an expanded mandate and directive to accelerate ongoing activities in order to position the telecommunications sector in the Americas to support the objectives of the Summit which include the establishment of a free trade zone for the whole of the western hemisphere. Senior telecommunications officials, both public and private, from all of the countries of the Americas will come together later this year with the objective to align the telecommunication sector behind the Summit objectives. CITEL will be there and will work to harmonize different objectives and to bring about an environment in the Americas which fosters the growth of telecommunications. ■



Roberto Blois

Roberto Blois de Souza is the Executive Secretary of the Inter-American Telecommunication Commission (CITEL) of the Organization of American States (OAS). Prior to becoming the Executive Secretary of CITEL in 1994, Mr. Blois held several key positions in the Ministry of Communications in Brazil including Private Telecommunications Services. Mr. Blois has served as Chairman of the Administrative Council of the Telephone Companies of Rio de Janeiro, Sao Paulo and Rio Grande do Sul in Brazil. He has headed numerous Brazilian Delegations to conferences and meetings of the International Telecommunication Union and CITEL. Mr. Blois holds an Engineering Degree in Electronics and Telecommunications from the University of Brasilia. ■

TR-8

Mobile and Personal Private Radio Standards

George Kamerer
Chair, TR-8
Consultant, Transcrypt International Ltd.

The scope of TR-8 is private radio communications systems, services and equipment, including voice or data applications. Within this industry, TR-8 is responsible for all technical matters and the promulgation of standards in various forms. These standards include system and service definitions, along with interoperability, compatibility and compliance requirements for systems and services, in addition to methods of measurement and performance expectations for various elements of the private radio communications system.

The increasing demand for improved service and spectrally efficient systems has given way to significant changes to mobile and personal private radio equipment. The technology modifications proposed to satisfy these demands have resulted in the need to formulate new standards to allow users to effectively implement the fast-paced changes. TR-8, the oldest active standards developing committee within TIA — having begun its work in 1944 — generates the documents necessary to satisfy these user needs.

1995 Activities

In 1995, TR-8, its subcommittees, task and working groups held six meetings at concurrent locations, with a number of teleconferences and single group meetings also taking place. Many of the meetings were held coincident with user-group meetings. Activity for 1996 is expected to continue at the same level as 1995.

Activities in 1995 included:

- Maintained and updated existing standards, mainly ANSI/TIA/EIA-603, "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards," covering equipment operating with current technology, during the transition by users to implement new technology;
- Balloted Land Mobile Linear Analog Modulation Communications Equipment Measurement and Performance Standards for narrow band equipment employed in the 220 MHz frequency band;
- Provided a description of an analog port for land mobile radios;
- Developed methods necessary to evaluate the impact of new technology applications;
- Progressed Enhanced Digital Access Communications Systems (EDACS) systems and standards definition;
- Produced Association of Public Safety Communications Officials (APCO) Project 25 supporting standards and other publications.

In continuing to advocate technological flexibility, the Technology Compatibility Working Group was established to deal with the impact of differing technology occupying the same spectrum. This group, chaired by David Brown, Ericsson, and Dr. Greg Stone, U.S. Immigration and Naturalization Service, has been considering the complex issues which can result from spectrum sharing. The group has prepared a preliminary report, with contributions from both industry and users, outlining its efforts to date. The results of this group effort will directly benefit users, regulators and coordinators, as well as equipment and system designers.

TR-8 continues to devote significant effort toward the formulation of APCO Project 25 documents. This effort, coordinated between the APCO/TIA Project 25 Interface Committee (APIC) and the TR-8 structure, has resulted in the release for publication of 20 TIA documents describing equipment and systems applicable to the APCO Project 25 Standard.

The forums provided by both APIC and the TR-8 organization have allowed participation from all facets of users and industry, with an unprecedented cooperation between users and the Committee resulting from this

effort. While many of the standards issues have been hotly contested, the increased sharing of differing points of view has created a legion of solutions and new ideas which will benefit users, industry and ultimately the public at large. As well, many of the documents are being considered as federal standards and parts have been proposed to international standards bodies. This effort will continue in 1996 with major emphasis on system interface designs.

On the international front, TR-8 monitors activity in the international standards arena through attendance at meetings by members in concert with the TIA staff. At present, ANSI/TIA/EIA-603 has been placed on the International Telecommunication Union agenda for international consideration.

Recent changes by the Federal Communications Commission which require new technology to use spectrum efficiently will cause the Committee to consider revising ANSI/TIA/EIA-603 and to focus on the migration to narrower bandwidths in 1996. It is also expected that the Committee will complete its macro system type interface standards. ■

VICE CHAIR

TR-8
John Oblak
E.F. Johnson Company

SUBCOMMITTEES:

TR-8.1 Equipment Measurement Procedures
Chair: John Oblak, E.F. Johnson Company

TR-8.5 Signaling and Data Transmission
Chair: Brad Wiseman, Garmin International

TR-8.6 Equipment Performance Recommendations
Chair: Al Wieczorek, Motorola

TR-8.10 Trunking and Conventional Control
Chairs: Dr. Richard Comroe - Motorola
Ed Kelly - Ericsson

TR-8.11 Antennas
Chair: Dale Horn, Allen Telecom Group Inc.

TR-8.14 ACSB Standards
Chair: Norm Shively - SEA

TR-8.15 Common Air Interface
Chair (Acting): George Kamerer - Transcrypt International Ltd.

WORKING GROUPS:

WG-8.3 Encryption
Chair: Eric Ziolko - Motorola

WG-8.4 Vocoder
Chair: Jim Holthaus - Transcrypt International Ltd.

WG-8.8 Technology Compatibility
Chairs: David Brown - Ericsson
Dr. Greg Stone - U.S. Immigration and Naturalization

TASK GROUPS:

TG-8.16 EDACS Task Group
Chairs: Dominick Arcuri - Ericsson
Mike Sasuta - Motorola

TR-14

Point-to-Point Communications Systems

M. Philip Salas
Chair, TR-14
Senior Director-Radio Product Development, Alcatel Network Systems

TR-14 is responsible for standards and recommended practices related to terrestrial fixed point-to-point radio communications equipment and systems, primarily in the frequency bands above 960 MHz. The Committee is sponsored by the Fixed Point-to-Point Microwave Section of TIA under the Network Equipment Division.

Of the TR-14 subcommittees, only TR-14.7 and TR-14.11 are currently active and working on projects. In December 1995, TR-14.7 completed the revision process for "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures," ANSI/TIA/EIA-222-F-95. The standard is now in review with ANSI for final approval prior to publishing which is expected in the spring of 1996. Most changes made in this standard were to clarify content contained in Revision E of EIA/TIA-222. The major content change was the addition of more comprehensive information related to corrosion protection for guy anchors.

In June 1994, TR-14.11 released the Telecommunications System Bulletin, TSB-10-F, "Interference Criteria for Microwave Systems." TSB-10-F was a major rewrite of the previous TSB-10-E document and now includes interference recommendations for any user of Federal Communications Commission Part 94 and Part 21 frequencies. An annex has been included which specifically addresses coordination recommendations for Personal Communications Services (PCS) uses of the 1850-1990 MHz fixed point-to-point microwave band.

Efforts to revise TSB-10-F (to be TSB-10-G) are already under way to include further information on digital radio interference criteria, as well as to continue updating the PCS-to-microwave coordination issues. TSB-10-G will include a section on radar interference into microwave receivers (Section 2.6), improve and expand the ability to calculate adjacent channel interference (Annex A), enhance the accuracy of video performance calculations (Annex C), and refine PCS-to-Microwave interference calculations (Annex F). ■

SUBCOMMITTEES:

TR-14.3 Station Grounding
Chair: Vacant

TR-14.6 Standard Microwave Transmission Systems
Chair: Vacant

TR-14.7 Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
Chair: Larry McPherson, Alcatel Network Systems, Inc.

TR-14.9 Electrical and Mechanical Characteristics for Terrestrial Microwave Relay Systems Antennas and Passive Refectors
Chair: Vacant

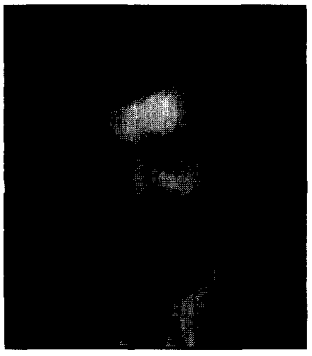
TR-14.10 Electrical Performance Standards for Television Relay Facilities
Chair:Vacant

TR-14.11 Interference Criteria for Microwave Systems
Chair: Phil Salas, Alcatel Network Systems, Inc.

TR-14.12 Waveguide Components
Chair:Vacant

TR-29

Facsimile Systems and Equipment



Stephen J. Urban
Chair, TR-29
Vice President Imaging Systems, Delta Information Systems

TR-29's scope of interest is standards relating to facsimile terminal equipment and systems, and their interfaces with communications equipment, other facsimile terminal equipment, and transmission media. Standards include functional, electrical and mechanical characteristics and communications protocols. Point-to-point and multipoint facsimile and audiographic services are also included among the Committee's areas of interest. TR-29's work on facsimile refers to any system that principally transmits (and receives) still rasterized images, not motion or freeze-frame video. The Committee is also responsible for the development of U.S. positions relating to facsimile and audiographic conferencing systems in international standards forums.

TR-29's contributions to the development of facsimile standards, nationally and internationally, led to the publication of the Group 3 Facsimile Standard in 1980. After several enhancements to the Group 3 standard, the Committee's attention is now focused on the next generation of fax capabilities such as simultaneous transmission of voice and facsimile in the same telephone connection, commercial secure facsimile and color facsimile. Color facsimile, with its increasing market demand, along with secure fax (an encryption tamper-free technology), are expected to become more prominent within the Committee and among the general public in the coming years.

1995 Activities

In 1995, TR-29 continued its work on enhancing standard interfaces between computers and facsimile, along with additional functionality such as inbound routing and call selection among telephone terminals, facsimile terminals, answering machines and data modems. Enhanced facsimile protocols that will reduce transmission time have also been a focus of TR-29's work.

Additional activity of TR-29 during the year included standards for audiographic conferencing services used in desktop conferencing and video conferencing.

On the international front, in 1995 Subcommittee TR-29.2 was especially active in its work to finish Interim Standard IS-650, "Multi-Function Peripheral Interface." The Subcommittee continued to develop recommendations to the International Telecommunication Union so that TIA/EIA-578A, "Facsimile DCE Control Standard - Service Class I," will become the international version used for Class I facsimiles, the most widely used in the world.

During the year, the group also submitted TIA/EIA-592, "Asynchronous Facsimile DCE Control Standard - Service Class II," as an international standard contribution.

Looking ahead in 1996, TR-29.2 will continue to upgrade TIA/EIA-578A and TIA/EIA- 592 to match international versions of the standard. In the years ahead, the TR-29 Committee will continue the activities undertaken in 1995, paying special attention to satisfying marketplace demands and presenting work in international standards arenas. ■

SUBCOMMITTEES:

TR-29.1 Binary File Transfer
Chair: David Duehren, Brooktrout Technology

TR-29.2 Facsimile Digital Interfaces
Chair: Vivian Cancio, Xerox

TR-29.3 Audiographics Teleconferencing
Chair: Bruce DeGrasse - BJ Communications

TR-29.4 Secure Facsimile
Chair: Bob Robinson - Ilex Systems

TR-29 Task Group on Facsimile Routing
Chair: Jim Rafferty - Human Communications

TR-29 Task Group on Telephone Answering Device Compatibility
Chair: Lloyd McIntyre - Xerox

TR-30

Data Transmission Systems and Equipment

Richard Brandt
Chair, TR-30
Consultant, Motorola
(dB Consulting)

TR-30 is responsible for standards relating to the functional, electrical and mechanical characteristics of interfaces between Data Circuit Terminating Eqiupment (DCEs) and Data Terminal Equipment DTEs), the telephone network and other DCEs.

TR-30 continues to be the primary source of U.S. input to the International Telecommunication Union -Telecommunications Standardization Sector Study Group 14 (ITU-T SG 14) as well as providing the input for the primary physical layer to Subcommitte X353, the Technical Advisory Group (TAG) to International Organization for Standardization/International Electrotechnical Committee Joint Technical Committee 1 Subcommittee 6 (ISO/IEC JTC1/SC 6).

TR-30 was originally established in the mid 1960s to specify a standard interface between computers and modems, then called data sets. The work of the Committee resulted in the popularly known RS 232. Today, its subcommittee's work still involves updating the "232" interface, now known as ANSI/EIA/TIA-232-E, "Interface between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange." The focus of TR-30 activity is simultaneous voice/data which allows a single voice connection to simultaneously carry audio and visual data, such as the technology found in a video phone. This technology is extremely important as it will allow new applications for modems and will be a boost for small businesses concerned about duplicative equipment. TR-30 also undertakes such activities as modem testing, modulation and unbalanced voltage.

1995 Activities

TR-30.1 is the leading producer of standards relating to modems, including modem control, maintenance, error control, and line signals in the United States. The Subcommittee is the primary developer of U.S. input to ITU-T Study Group 14's modem work. The most recent work resulting from a TR-30.1 contribution is ITU-T Recommendation V.34, "A modem operating at data signalling rates of up to 28800 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits."

The present focus of TR-30.1 is the development of a suite of Recommendations for Digital Simultaneous Voice and Data (DSVD) consisting of ITU-T Draft Recommendations V.8bis (a protocol for identifying and switching between different modes of operation) , V.dsvd-c (a protocol for controlling the modems operation when in the simultaneous voice/data mode), V.dsvd-s (description of

VICE CHAIR

TR-30
Fred Lucas
General DataComm Inc.

SUBCOMMITTEES:

TR-30.1 Modems
Chair: Les Brown, Motorola Information Systems Group

TR-30.2 DTE-DCE Interfaces
Chair: Fred Lucas, General DataComm Inc.

TR-30.3 Data Communications Equipment Evaluation and Network Interfaces
Chair: Jack Douglass, Sierra Semiconductor

TR-30.4 DTE-DCE Protocols
Chair: Jay Bain, Motorola Information Systems Group

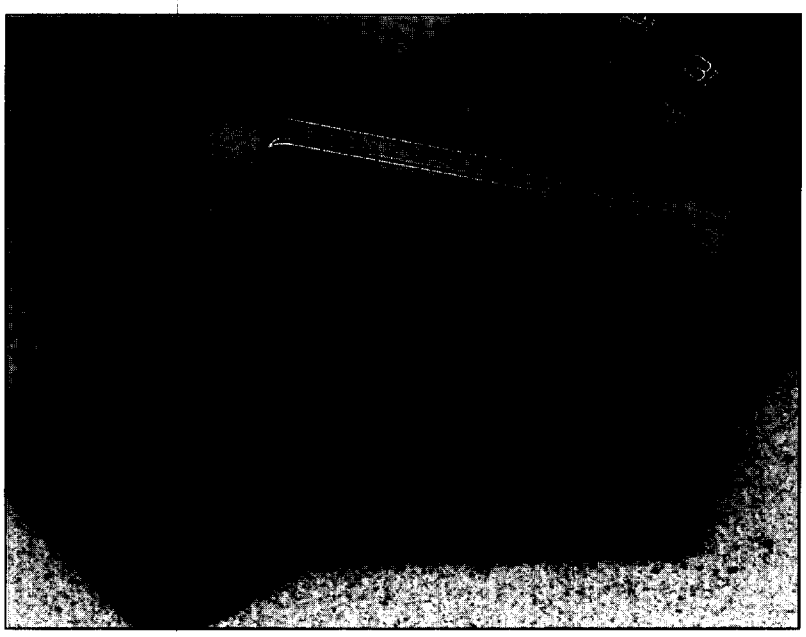
the DSVD system), V.gmux (a multiplexer for combining the digitized voice and data) and Draft Recommendation V.61 an analog approach to simultaneous voice and data. This technology will provide the backbone for voice grade multi-media applications. In 1996, TR-30.1 will continue in its role of being the primary developer of U.S. input to ITU-T Study Group 14's modem work

TR-30.2, the oldest TR-30 subcommittee, has the responsibility for the development of specifications of DTE-DCE Interfaces. The most recent standard produced by this Subcommittee is ANSI/TIA/EIA-644, "Electrical Characteristics for Data Signalling Rates up to 655 Mbit/s." The active projects within TR 30.2 are a DCE-DTE Interface for digital cellular developed in close cooperation with TR-45.2, a medium speed DTE-DCE Interface (for V.34), and a Revision of EIA-485, "Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems." In addition to its domestic standards work, this Subcommittee will continue to provide the primary U.S. input to the DTE-DCE interface work of ITU-T SG-14 and the TAG input, including the recommended U.S. ballot positions, to ISO/IEC JTC1/SC 6.

TR-30.3 develops standards relating to the interface between DCEs and the telephone network. Its present focus is the development of procedures for testing modems against simulations of the public telephone network. Work is presently underway on a revision to TSB-37, "Public Switched Telephone Network Transmission Simulation for Evaluating Modem Performance," to reflect changing network and modem requirements. A major U.S. submission on modem testing, developed by TR-30.3, has become the base text for new Draft ITU-T Recommendation V.mt slated for approved in March 1996. In addition to its ITU-T work, this Subcommittee is in the process of developing a specification for testing modems in a cellular environment.

TR-30.4, the newest subcommittee of TR-30, has the responsibility for developing standards for local protocols between DTEs and DCEs at the DTE-DCE interface. Its initial work resulted in the publication of TIA/EIA-602, "Data Transmission Systems and Equipment - Serial Asynchronous Automatic Dialing and Control," which provides, for the first time, a standardized basic set of AT commands. This work was then taken to ITU-T SG 14 where it was adopted as ITU-T Recommendation V.25ter, "Serial automatic dialing and control." Its work in the international standards arena continues with the recent acceptance by ITU-T SG 14 of base line text, developed by TR-30.4, for Draft Recommendation V.ib (a new in-band approach to DCE control) which is slated for approval in March 1996. In 1996 TR-30.4 will continue its work of adding to the list of "602" commands.

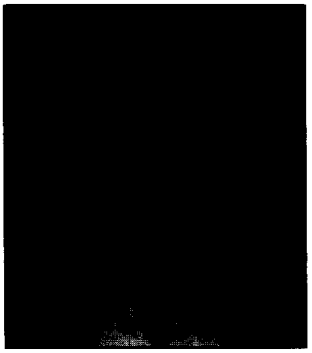
TR-30's tradition of close cooperation with the international standards community is apparent by the 43 contributions made to the ITU in 1995. The Committee plans to continue to blaze the trail for modem standards on an international level. ■



TIA standards are implemented in hardware that require different functions such as credit card-size modems. The Motorola CELLect 14.4 PCMCIA modem can execute TIA fax and modem standards.

TR-32

Personal Radio Equipment



Jim Haynes
Chair, TR-32
Chief Engineer,
Uniden America Corporation

TR-32's activities involve writing standards for wireless consumer communications devices such as cordless telephones and citizens band radios. The growing popularity of these products over the last several years has given rise to increased congestion on assigned radio frequencies, requiring additional spectrum from the Federal Communications Commission (FCC).

1995 Activities

TIA's Mobile and Personal Communications Division's (MPCD) Consumer Radio Section (CRS) filed petitions with the FCC seeking added spectrum to be used by cordless telephones and was rewarded in 1995 for its tenacity. The FCC authorized 15 additional channels for a 150% increase in spectrum. In 1995, the MPCD CRS decided to relocate its efforts under the User Premises Equipment Division (UPED) and changed its name to the UPED Wireless Consumer Communications Section (WCC). This section sponsors TR-32. With additional channels and growing product popularity among its issues, TR-32 is anticipating increased activity in 1996.

Spectrum for use of Personal Communications Services (PCS) operating in the Emerging Technologies band continues to be an area of focus for the Committee. When the FCC responded to TIA's petition for additional spectrum, the FCC included TIA's proposal to require new cordless telephones utilizing the proposed new channels to monitor the existing channels in order to ensure an idle condition before transmitting, since the proposed spectrum would be shared with other services. To the extent that standards are required for such a monitoring feature, TR-32 will undertake such work.

TR-32 has also been involved in citizens band radio equipment, issuing such standards as EIA-424, "Minimum Standards — Citizens Radio Service — SSB Transceivers Operating in the 27 MHz Band" and ANSI/EIA/TIA-382-A-89, "Minimum Standards — Citizens Band Radio Service Amplitude Modulated (AM) Transceivers Operating in the 27 MHz Band." The latter of these standards details definitions of the minimum standards intended to promote the capability of these transmitters and receivers with the communications systems in which they will operate, though they should not be construed as a guideline for definition of a high-performance product.

The members of the WCC Section and TR-32 supported TIA's efforts under the North American Free Trade Agreement (NAFTA) to secure spectrum for cordless telephone operation in Mexico. In 1995, the Mexican government allowed such operations.

TR-32 expects a flurry of activity in 1996, with plans to reaffirm EIA/TIA-382, the CB radio standard, as well as to study the need to write a standard for cordless telephones with regard to establishing guidelines for "channel occupancy" of the new 25-channel models. To guide the Committee's work forward in the coming year, Roger Bisby, Maxon America Inc., was appointed vice-chair in January 1996. ■

VICE CHAIR
TR-32
Roger Bisby
Maxon America

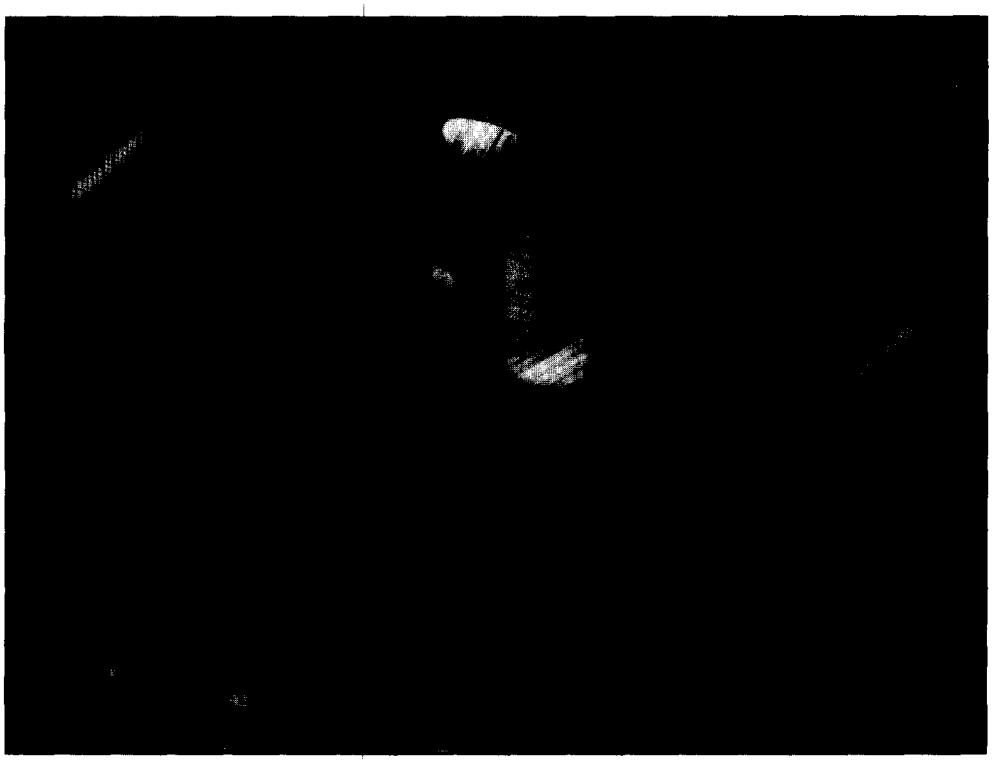
TR-34*

Satellite Equipment and Systems

In the fall of 1995, the TIA Board of Directors approved the creation of a new Satellite Communications Division (SCD). Committee TR-34, previously sponsored by the Network Equipment Division, is now sponsored by the SCD. TR-34's activity will be redefined and expanded as part of the new division's requirements for technical activities. Divisions identify requirements for technical work and may request specific priorities; however, the actual technical work is done in engineering committees that operate in accordance with TIA's Engineering Manual. The engineering committees, including TR-34, are open to TIA members and other materially interested parties.

TIA established the SCD in response to the wide growth and proliferation of regional and international satellite systems and the need for development of standards on interoperability and interworking of satellite and terrestrial systems. The SCD held an organizational meeting late in 1995 to discuss the structure of the new division and to develop its scope, charter and mission. On January 17, 1996, SCD elected its chair, Dr. Thomas Brackey of Hughes Space and Communications Company, and formed two sections, the Communications and Interoperability Section (CIS) and the Spectrum/Orbit Utilization Section. Dr. Prakash Chitre of COMSAT Network Systems was elected chair of the CIS. SCD will oversee a structure of sections and committees which address issues specific to various sectors of the satellite industry.

It is expected that as the SCD's work plan is developed in 1996, specific standards projects and other technical activities will be identified and TR-34, in addition to some other new engineering committees, may be named as the logical locations to carry on this work. Satellites are playing an increasingly larger role in the vision of National and Global Information Infrastructures (NII/GII) and interoperability and spectrum use issues will need to be addressed. Participation in the programs of the International Telecommunication Union (ITU) will also be an important activity to be undertaken in 1996. ■

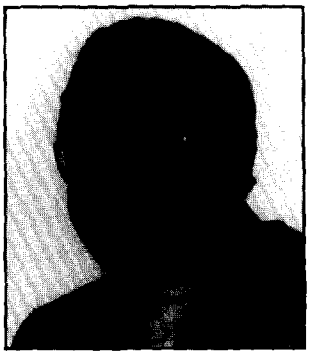


Satellites, such as this Hughes Communications' Galaxy III-R, are becoming an increasingly important part of the NII and GII.

**A TR-34 chair will be elected as the Committee's role in SCD is defined.*

TR-41

User Premises Telephone Equipment Requirements



Charles Berestecky
Chair, TR-41
Manager, Mandatory Product Standards,
AT&T

TR-41 develops and maintains voluntary standards relating to telecommunications terminal equipment, telecommunications systems, private telecommunications networks, and auxiliary equipment and devices. These standards primarily focus on equipment, systems and networks used for voice service, as well as integrated voice and data service. This work includes premises distribution systems and wireless customer premises equipment.

In addition, these standards include service and performance criteria for the equipment, systems and networks, as well as information necessary to ensure proper interworking with each other, with public networks, and with carrier-provided private-line services. These standards address the physical, electrical, functional and procedural aspects of all phases of a telecommunications connection. TR-41 addresses all aspects of in-building wiring and formulates positions and proposals for the harmonization of regulatory, safety and environmental requirements. Network interface characteristics are addressed from a terminal equipment perspective and include consideration of customer premises wiring, work in other standards bodies and actions of regulatory agencies.

TR-41's standards and technical reports are viewed as a product, built to the requirements of industry customers. TR-41's overriding philosophy is that business is best stimulated by providing customers with quality standards products that give end-users compatible choices and give TIA members an opportunity to deliver products to market when the customer needs them, world-wide. As such, TR-41 cooperates with national and international standards organizations and adopts the work already conducted by other bodies where appropriate.

TR-41 has taken a leadership role in the development of premises distribution systems and has put into place work projects that support the development of National and Global Information Infrastructures.

SUBCOMMITTEES:

TR-41.1 Multiline Terminal Systems
Chair: Dick Frank, ROLM

TR-41.2 Conformity Assessment
Chair: Pierre Adornato, NORTEL

TR-41.3 Residential Terminals
Chair: Dennis Rittenhouse, University of Waterloo

TR-41.4 Network Channel Terminating Equipment Standards
Chair: Vacant

TR-41.5 Multimedia - Building Distribution Systems
Chair: Jim Romlein, MIS LABS

TR-41.6 Wireless User Premise Equipment Systems
Chair: Peter Bligh, MITEL Corporation

TR-41.7 Environmental and Safety Considerations
Chair: Roy Baker, Reliance Comm/TEC

TR-41.8 Commercial and Residential Building Cabling Systems
Chair: George Lawrence, AMP Incorporated

TR-41.8.1 Commercial Premises Distribution Working Group

TR-41.8.3 Architecture

TR-41.9 Terminal Attachment Programs
Chair: Anh Wride, Communication Certification Laboratory

1995 Activities

In 1995, Victor Boersma, Northern Telecom, retired after 12 years as chairman of TR-41. Under Boersma's leadership, TR-41 grew significantly in its scope of activities and number of participants. He was instrumental in expanding TR-41's role from developing standards for traditional user premises telecommunications equipment to standards for network channel terminating equipment, bandwidth-on-demand equipment, wireless user premises equipment and premises distribution systems.

During the year, subcommittee TR-41.1 initiated a technical bulletin on global Private Branch Exchange (PBX) transmission, the result of five years of research on transmission parameters for PBXs in Europe and the U.S. Two joint meetings with TR-41.1 and the European Telecommunications Standards Institute (ETSI) during the year addressed this technical bulletin, comparing transmission parameters.

TR-41.2 continues to develop a consistent North American point of view on conformity assessment issues more aligned with similar activities of international bodies. Conformity assessment is the verification of a laboratory's competency to test equipment to other technical specifications such as product safety, electromagnetic compatibility and terminal attachment requirements.

TR-41.3 has been active in offering its expertise on telephone equipment, enabling TIA to file technical comments on the Federal Communications Commission's (FCC) Hearing Aid Compatibility Negotiated Rulemaking Committee's (HACNRC) Notice of Proposed Rulemaking. The Subcommittee also provided a technical demonstration of hearing aid compatibility to assist the HACNRC in its work.

TR-41.5 continues to examine the infrastructure necessary for various communications systems to meet the "information superhighway" requirements and to examine multimedia.

TR-41.6 pursued an aggressive schedule to produce wireless private networking standards and has prepared three air interface standards (radio) for wireless user premises equipment such as wireless PBXs.

At the request of the FCC, TR-41.7 incorporated comments from numerous industry sources to finalize the standard for Radio Frequency Immunity Requirements for Telephone Equipment. This standard was developed in response to numerous consumer complaints about interference. The Subcommittee also edited a free consumer brochure on how to reduce telephone interference problems from radio, TV or other sources.

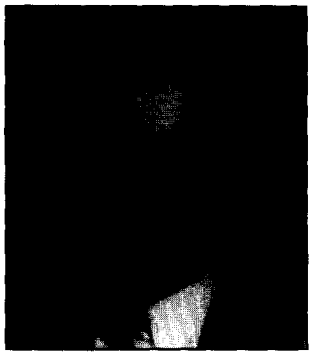
TR-41.8, a foremost developer of standards and recommended practices for premises distribution, continued to swiftly move toward adopting new technologies in cabling and connectors to meet the needs of the dynamic cabling industry. The release of the much awaited TIA/EIA-568-A, "Commercial Building Telecommunications Cabling Standard," was a highlight of 1995. The Subcommittee also produced bulletins on link performance and centralized optical fiber cabling systems. The premises distribution standards produced by TR-41.8 are used well beyond just the telecommunications industry and, thus, have become TIA's most widely publicized standards.

TR-41.9 provides technical assistance to the FCC and TIA in regulation matters of Title 47, Code of Federal Regulation, Part 68, and the Subcommittee identifies issues related to the harmonization of terminal attachment standards in the three countries governed by the North American Free Trade Agreement (NAFTA). In 1996, when the harmonization of the U.S.'s Part 68 and Canada's CS-03 is approved by the FCC, the Subcommittee will revise TSB-31A, "Part 68 Rational and Measurement Guidelines."

On the international front, TR-41 has continued to provide expertise to working groups of the Consultative Committee on Telecommunications (CCT) in its effort to harmonize telecommunications standards. Formed as a tri-lateral group with representatives from the private and public sectors of Canada, Mexico and the United States, CCT meets quarterly to discuss telecommunications issues arising under NAFTA's Chapters 9 and 13. CCT's activities support the government-only Telecommunications Standards Subcommittee (TSSC), established by NAFTA; however, CCT's charter is not limited to NAFTA issues. TIA is the Secretariat for the United States' delegation and TR-41 Chair Chuck Berestecky leads that delegation. He will become chair of CCT for two years beginning in March 1996. ■

TR-45

Mobile and Personal Communications Public 800 Standards



John A. Marinho
Chair, TR-45
Technology Director, AT&T Network Systems

The TR-45 Committee is responsible for Mobile and Personal Communications standards that support the commercial mobile radio industry of today, and will support Personal Communications Services (PCS) networks within the 800 MHz band of the future.

1995 Activities

In 1995, TR-45 focused on upgrading its family of standards with added features and revisions. It was also involved with implementation of the Communications Assistance for Law Enforcement Act (CALEA). The TR-45 Committee continues to remain involved in technically assisting the needs of law enforcement bodies for efficient, standardized electronic interceptions pursuant to lawful authority, as required by CALEA.

During the year, the TR-45.1 Subcommittee completed revising the analog standard to incorporate subscriber authentication and narrowband technology and plans to publish the document as Revision A of Interim Standard IS-91. In addition, the Subcommittee has continued work on IS-19, "Recommended Minimum Standards for 800-MHz Cellular Subsriber Units" and IS-20, "Recommended Minimum Standards for 800-MHz Cellular Land Stations" and has prepared these standards for American National Standards Institute (ANSI) ballot. Lastly, as a result of the joint 800 and 1800 Section meeting, TR-45.1 has undertaken work to provide for standards at the 1800 MHz PCS bands consistent with those technologies currently in its work plan.

In 1995, TR-45.2 completed the ANSI ballot of Revision A of IS-52, "Uniform Dialing Procedures and Call Processing Treatment for Use in Cellular Radio Telecommuncations." In addition, the Subcommittee completed Revision A of IS-53, "Cellular Features Description" providing for 25 new features and services. The group also began work on the technical requirements for encryption to prevent cellular signal interception. The "signaling encryption" work was developed in response to CALEA and TR-45 expects to continue its activities in this area. In 1996, the Subcommittee anticipates work on the Wireless Intelligent Network (WIN) and standards for Operations, Administration and Maintenance (OA&M) relative to the 800 and 1800 MHz bands. TR-45.2 also plans to address standards for Emergency Services (E911) and Lawfully Authorized Electronic Surveillance for the 800 and 1800 MHz bands.

The TR-45.3 completed and published the Digital Control Channel Standard, IS-136, providing for an all digital Time Division Multiple Access (TDMA) capability,

SUBCOMMITTEES:

TR-45.1 Analog Cellular Technology
Chair: Tony Akers, Motorola

TR-45.2 Cellular Inter-System Operations
Chair: Cheryl Blum, AT&T

TR-45.3 Digital Cellular Technology
Chair: Peter W. Nurse, AT&T

TR-45.4 Microcellular/PCS Technology
Chair: Stephen S. Jones, NEC America, Inc.

TR-45.5 Wideband Spread Spectrum Digital Technology
Chair: Gerard Flynn, Bell Atlantic NYNEX Mobile Communications

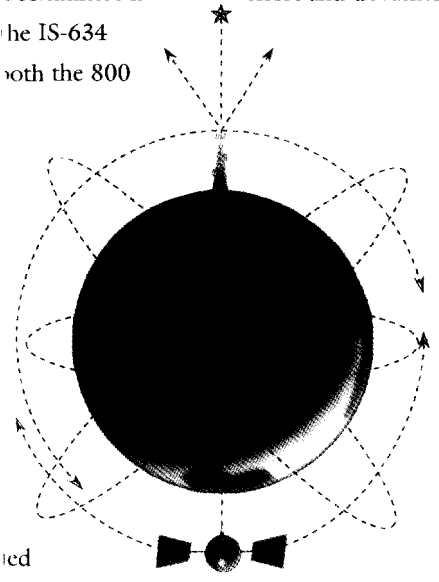
with enhanced new features and services. In 1996, TR-45.3 will undertake standardization of a new digital speech codec standard, as well as consolidation of the TDMA-related standards for both the 800 and 1800 MHz bands.

The TR-45.4 has completed standardization of auxiliary services based on the analog standard for in-building application. In addition, work on "A" interface standards dealing with the base-station-to-switch reference point was concluded with publication of IS-634, "MSC-BS Interface for Public 800 MHz." In 1996, the Subcommittee is expected to publish the next revision of the IS-634 standard that will support operations at both the 800 and 1800 MHz bands.

The TR-45.5 Subcommittee has concluded enhancements in several areas as they relate to IS-95 Code Division Multiple Access (CDMA)-based standards. Ballot of the proposed IS-99 "Data Services Option Standards for Wide Band Spread Spectrum Digital Cellular Systems," has also been concluded, dealing with CDMA data capabilities. Work on an Enhanced Variable Rate speech coder for IS-95, has concluded the milestone where a core algorithm has been selected and enhancements will now be evaluated as they proceed. Ballot and publication of the standard is anticipated in early 1996. Also in 1996, the Subcommittee will consolidate the CDMA-related standards at the 800 and 1800 MHz bands.

In support of its subcommittees, TR-45 has conducted Joint Experts Meetings (JEM) dealing with international roaming and emergency services. In addition, the Ad Hoc Authentication Group has defined an encryption algorithm for application to the data standards within TR-45.

In 1995, an ad hoc group on standards compatibility issues was created. Chaired by John McQueen, Southwestern Mobile Systems, the group has concluded an industry survey relative to Control Channel compatibility for the air-interface standards of TR-45, and will arrive at detailed recommendations early in 1996

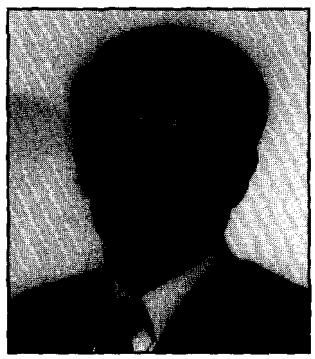


Representatives from both TR-45 and TR-46 participated in the annual meeting of the Working Party 8A (WP8A) of the International Telecommunication Union (ITU). WP8A is the ITU Radiocommunications Sector's group which adopts recommendations for terrestrial mobile radio systems. The U.S. delegation successfully affected adoption of 12 U.S. wireless standards.

Moving forward in 1996, TR-45 will address the convergence of standards activities to avoid duplicative effort and documentation. ■

TR-46

Mobile and Personal Communications 1800



Anil Kripalani
Chair, TR-46
Vice President, International Technology & Service Planning, QUALCOMM, Incorporated

TR-46 is authorized to develop and maintain performance, compatibility, interoperability and service standards for the Personal Communications Services (PCS) band, originally called the 1800 MHz band and now commonly referred to as the 1900 MHz band. With the Federal Communications Commission's (FCC) decision not to mandate a single standard, the current PCS standards allow the marketplace to choose between several technologies.

1995 Activities

The successful completion of the PCS A- and B-band auctions in 1995 has made it imperative that systems in the 1800 to 1950 MHz band be deployed promptly. With completion of the C-band auction, 1900 MHz equipment will proliferate, making it even more critical for approved industry standards to allow compatibility across different systems and for multiple manufacturers to supply equipment for PCS networks. In an effort to provide for greater choice in the marketplace, with multiple interface specifications supporting alternative system solutions, TR-46 has completed several standards for each of the air/network/intersystem interfaces.

The TR-46.1 Subcommittee, responsible for service descriptions and system requirements, recently completed Revision A of Interim Standard (IS) 104, "Personal Communications Service Descriptions for 1800 MHz." Work on IS-104 Revision B is planned. New requirements for the A-interface were completed in 1995 as part of Project Number (PN) 3307. The Subcommittee's work on Lawfully Authorized Electronic Surveillance (LAES) requirements as a result of the Communications Assistance for Law Enforcement Act (CALEA) will be refocused on specific aspects of DCS-1900. The overall framework of this project will be as specified in the TR-45 Committee as progress continues in that forum.

TR-46.2 is generally tasked with infrastructure standards to support Common Air Interface Standards (CAI) and is comprised of three working groups—Network Signaling (TR-46.2.1), responsible for Signaling System Number 7 (SS7) A-interface development; Intersystem Operations PCN-to-PCN (TR-46.2.2), responsible for Mobile Application Part (MAP) development; and Intersystem Networking (TR-46.2.3), responsible for "Interworking & Interoperability (I&I) Between Dissimilar MAPs" and network routing issues. TR-46.2's work on a number of projects has resulted in several interim standards: Integrated Services Digital Networks (ISDN)-based A-interface (IS-653), Frame Relay-based A-interface, SS7-based A-interface (IS-651 Rev. A), SS7 Signaling Network Routing, DCS-1900 MAP (IS-652 Rev. A), PCS 1800

VICE CHAIR

TR-46
Stephen Jones
NEC America

SUBCOMMITTEES:

TR-46.1 Services And Network Reference Models
Chair: P.J. Louis, BELLCORE

TR-46.2 Network Interfaces
Chair: Douglas Rollender, AT&T Network Systems

TR-46.3 Air Interfaces
Chair: Tony Akers, Motorola

Privacy and Authentication (P&A) Ad Hoc
Chair: Vacant

Intercept Access Service Requirements, PCS 1800 Emergency Service Requirements, Interworking/Interoperability Between DCS-1900 and IS-41 Based MAP's.

IS-653 provides a standardized A-interface solution that utilizes the ISDN lower layers for call control, and Non-Call Associated Signaling to transport the Mobility Management Applications Protocol (MMAP) being developed by Subcommittee T1S1. The Frame Relay-based work and the Code Division Multiple Access (CDMA) parts of the third A-interface, the SS7-based A-interface document, IS-651, have been transferred to IS-634. IS-651 will now focus on DCS-1900 in its Revision A, currently in development.

In the area of Intersystem Operations (PCN-to-PCN), TR-46.2 is responsible for MAP work and has recently finished work on a Telecommunications Systems Bulletin (TSB) on IS-41, TSB 68, and on the DCS-1900 MAP, IS-652. The group's work on Revision A of IS-652 has begun.

TR-46.2 had intended to work jointly with TR-45 on LAES specifications. After reorganizing TR-46 in early 1996, the remaining work on LAES in this subcommittee is intended to focus on DCS-1900 support. This document will then be used as input to the TR-45.2 LAES Ad Hoc Subcommittee.

The Interworking and Interoperability project in TR-46.2 is tasked to facilitate interworking and interoperability between systems using IS-41- and GSM-based MAPs and to work on network routing issues. As PCS 1900 systems grow in popularity, interworking between systems will become even more important.

By way of background, late in 1992, an ad-hoc Joint Technical Committee (JTC) on Air Interfaces was formed between TIA and Committee T1; the TR-46.3.3 Subcommittee is the TIA co-parent of the JTC. Seven Technical Ad-Hoc Groups (TAGs) were created to oversee the candidate air interfaces proposed for standardization. During 1995, the JTC completed recommendations for six air interfaces that were subsequently balloted. Several American National Standards Institute (ANSI) standards and TIA interim standards documents have resulted. The JTC was also responsible for the testing of six systems to correspond to the above air interfaces. Tests were performed at an industry testbed in Boulder, CO. Results were documented and are now available. Improvements to some standards have been balloted. After having fulfilled its mission and completed its work, the JTC will be disbanded.

In 1995, the Privacy and Authentication (P&A) Ad Hoc Subcommittee was responsible for generating the three-volume set of PCS P&A Requirements that included common requirements, as well as those that applied to DCS-1900 and IS-41-based systems. Some work has been merged with TR-45's Ad Hoc Subcommittee on P&A. DCS-1900 related work is expected to continue in TR-46 in 1996.

In the first half of 1996, TR-46 will undergo a reorganization, transferring the ongoing development of a portion of its standards work to other organizations in order to focus its attention in key areas. Participating in joint project work with other standards organizations will be explored throughout the year. ■